



Paytakhty Kurdistan

Technical and Vocational Institute

Paitaxt Technical institute
Nursing Department Article
Anatom

Kidney



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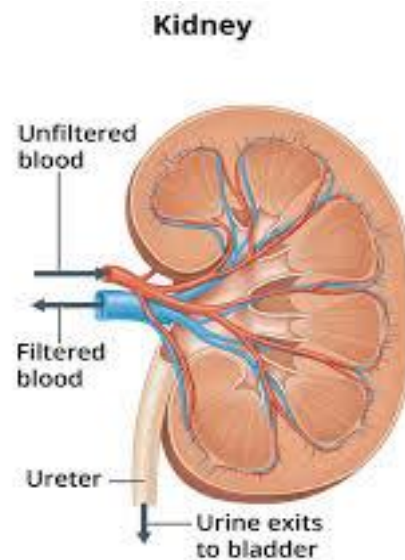
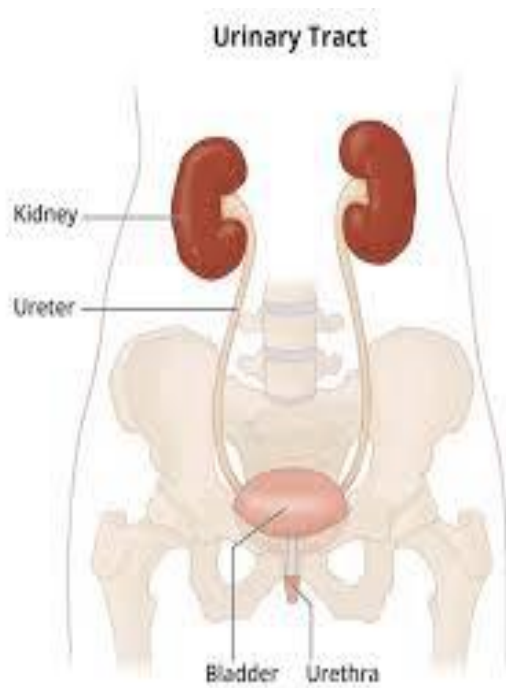
2024-2025

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Introduction on Kidneys

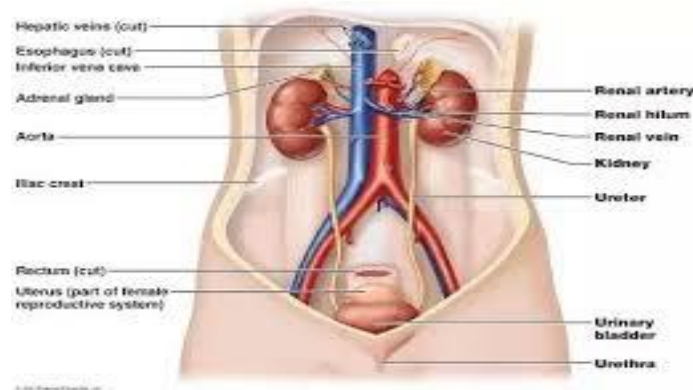
The kidneys are vital organs that play a crucial role in maintaining the body's overall health and stability. These two bean-shaped structures, located on either side of the spine just below the rib cage, act as the body's natural filtration system. They remove waste products, toxins, and excess fluids from the blood while regulating essential processes such as electrolyte balance, blood pressure, and red blood cell production. Despite their relatively small size, the kidneys process approximately 50 gallons of blood daily, highlighting their efficiency and importance. This report explores the structure, functions, and significance of the kidneys, emphasizing their indispensable role in sustaining life.



Anatomy of the Kidneys

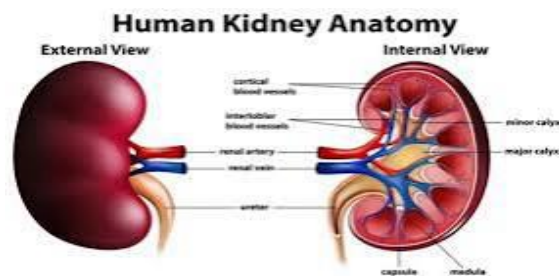
1. Structure:

- Each kidney is approximately 10-12 cm long, 5-7 cm wide, and weighs about 120-150 grams.
- The outer part of the kidney is called the renal cortex, while the inner part is the renal medulla.
- The functional units of the kidney are nephrons, which filter blood and produce urine.



2. Components:

- Renal artery and vein: Supply blood to and from the kidneys.
- Ureters: Tubes that carry urine from the kidneys to the bladder.
- Renal pelvis: A funnel-shaped structure where urine collects before passing to the ureter



Functions of the Kidneys

1.Filtration:

- Kidneys filter about 50 gallons of blood daily, removing waste products, toxins, and excess substances.
- Key waste products include urea, creatinine, and excess salts.

2.Fluid and Electrolyte Balance:

- Regulate levels of sodium, potassium, and calcium.
- Maintain proper hydration by controlling water excretion

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3.Blood Pressure Regulation:

- Produce renin, an enzyme that helps regulate blood pressure through the renin-angiotensin-aldosterone system (RAAS).

4. Erythropoiesis:

- Produce erythropoietin, a hormone that stimulates red blood cell production in the bone marrow.

5.Acid-Base Balance:

- Regulate the pH of the blood by excreting hydrogen ions and reabsorbing bicarbonate

Common Kidney Disorders

1. Chronic Kidney Disease (CKD):

- Gradual loss of kidney function over time.
- Causes: Diabetes, hypertension, glomerulonephritis.
- Symptoms: Fatigue, swelling, high blood pressure, and abnormal blood tests.

2. Acute Kidney Injury (AKI):

- Sudden loss of kidney function.
- Causes: Severe dehydration, infections, or toxic medications

3. Kidney Stones:

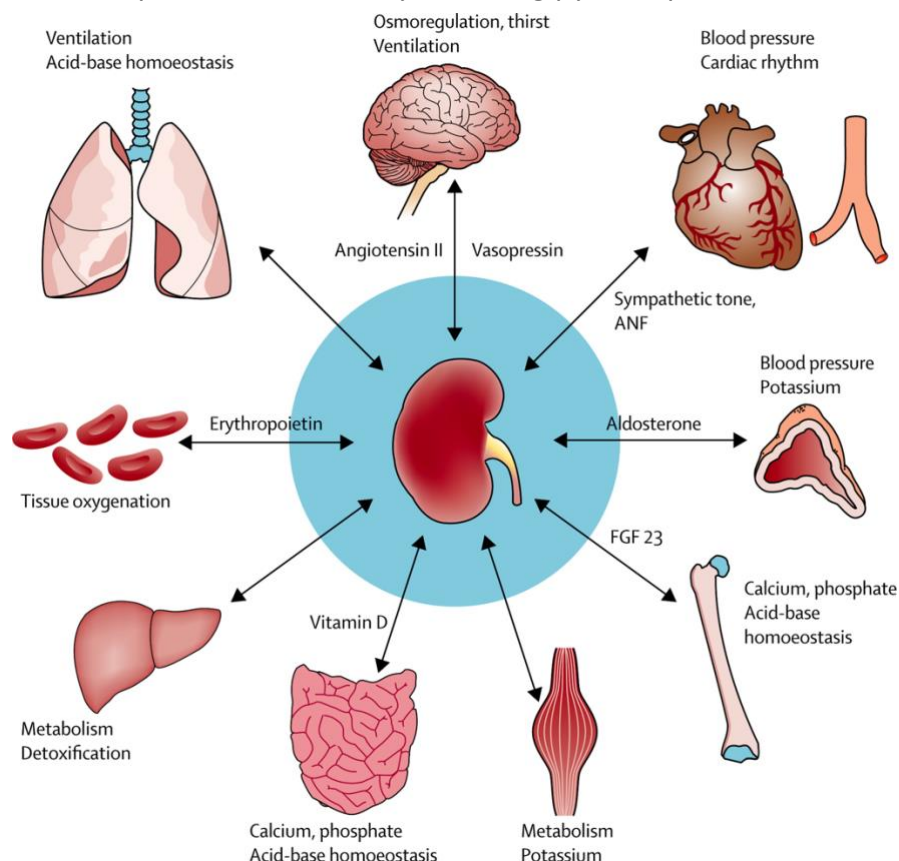
- Hard deposits of minerals and salts that form in the kidneys.
- Symptoms: Severe pain, blood in urine, nausea.

4. Polycystic Kidney Disease (PKD):

- Genetic disorder causing cysts in the kidneys.

5. Urinary Tract Infections (UTIs):

- Infections that can spread to the kidneys, causing pyelonephritis.



Maintaining Kidney Health

1. Hydration:

- Drink adequate water to support filtration and prevent kidney stones.

2. Healthy Diet:

- Limit salt and protein intake.
- Include fruits and vegetables rich in potassium and magnesium.

3. Avoid Toxins:

- Minimize alcohol consumption and avoid overuse of medications like NSAIDs.

4. Regular Check-ups:

- Monitor blood pressure, blood sugar, and kidney function, especially for high-risk individuals.

5. Physical Activity:

- Regular exercise helps maintain healthy blood pressure and weight.



Key Diagnostic Tests

1. Urine Tests:

- Check for protein, blood, or glucose in urine.

2. Blood Tests:

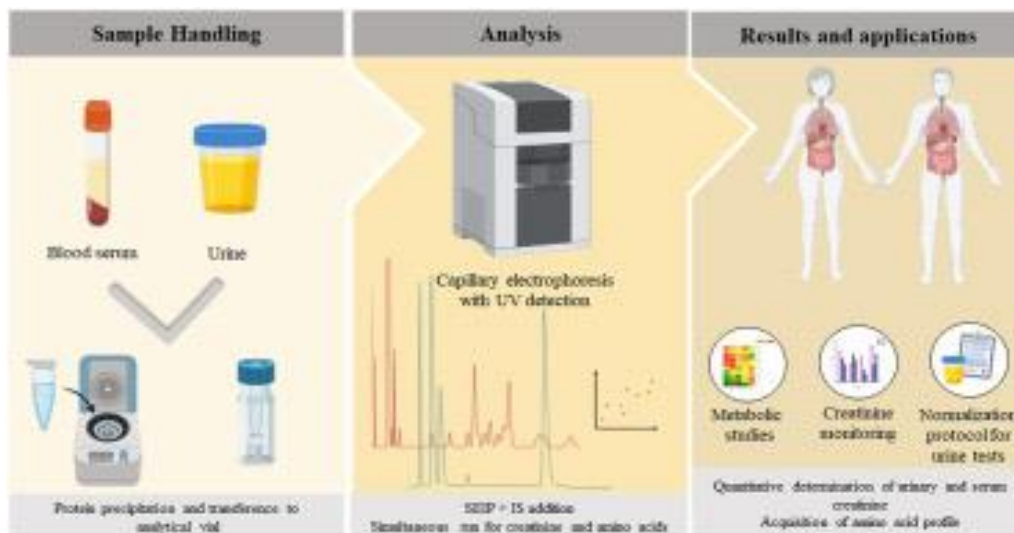
- Measure levels of creatinine, blood urea nitrogen (BUN), and glomerular filtration rate (GFR).

3. Imaging:

- Ultrasound or CT scans to identify structural abnormalities.

4. Biopsy:

- Used to diagnose underlying kidney diseases.



Conclusion

The kidneys are essential organs for maintaining homeostasis and overall health. Protecting kidney function involves a healthy lifestyle, regular monitoring, and prompt treatment of underlying conditions. Early detection and management of kidney issues can prevent severe complications.

Reference

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4.MedlinePlus (U.S. National Library of Medicine)

•Kidney Diseases: <https://medlineplus.gov/kidneydiseases.html>

5.World Health Organization (WHO)

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